



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

Application of:
JOSEPH B. KEJHA
Serial No. : 08 / 950,445
Filed : October 15, 1997
Title : Long Range and Ultralight
Electric Vehicle.

Examiner : F. Vanaman
Art Unit : 3611

May 6, 2000

BRIEF OF APPELLANT

This is an appeal from the final rejection of the Examiner dated December 27, 1999 rejecting the claims 10-12, being all the rejected claims in the case. This brief is accompanied by the requisite fee set forth in Sec. 1.17 (f).

STATUS OF ALL CLAIMS

This application was filed on October 15, 1997 as a continuation in part of Application Serial No. 08 / 373,090 filed January 17, 1995 (now abandoned), which is related to a prior co-pending Disclosure Document of Joseph B. Kejha, Serial No. 322,973 filed on January 12, 1993.

Per Examiner's action of April 13, 1999 applicant elected on May 5, 1999 restriction of this application to Species II, claims 10-12, drawn to a vehicle powered by a hydrogen fueled engine.

Applicant filed on March 27, 2000 a continuation in part of this application, restricted to Species I, claims 1-9, 13-14, and 28-34, drawn to an electrically powered cycle.

Applicant will file a continuation in part of this Application, restricted to Species III, claims 24-25, drawn to a vehicle with parallel battery chargers, and a continuation in part

of this Application , restricted to Species IV , claims 15,26-27 , drawn to a vehicle frame formed from a magnesium alloy.

Four claims (10 ,11 , 12 and 34 dependent on claims 10-12) of this application were rejected on July 12, 1999 , and an amendment was filed on October 12, 1999 , which canceled claim 34 and amended claims 10-12. The claims 10-12 were finally rejected on December 27, 1999.

Applicant on March 25, 2000 sent the Notice of Appeal to the Board of Appeals.

The status of the claims is as follows :

Claims allowed : none

Claims canceled : 34

Claims objected to : none

Claims rejected : 10-12

Claims pending : 1-9 , 13-33

Claims 10-12 rejection under 35 U.S.C. sec.112 has been withdrawn by the Examiner.

Claims 10-12 were rejected under 35 U.S.C. sec.103 as obvious over West No.

3,517,766 , Laumann at al. No. 4,112,875 , Thomson at al. No.3,554,311 , and Munday No. 5,143,125.

Applicant appeals the final rejection of claims 10-12.

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF INVENTION

Applicant's invention (in this case restricted to Species II) is directed to a hydrogen fueled electric hybrid vehicle, which has a long range while being non-polluting.

In the prior art an electric hybrid vehicle has been proposed to increase the range, but the non-electric portion is not free from atmospheric pollution.

A combustion engine , which only reduces atmospheric pollution and extends the range has been also proposed, and which engine uses a hydrogen generating cell as a supplement to a conventional gasoline fuel , to improve the efficiency of the engine.

A hydrogen-oxygen gases fueled ,closed cycle combustion engine with a noble gas working fluid , and which is not open to air , and which is used in combination with solar cells-electrolyzer and a generator as a fixed power plant has been proposed , but this system uses the above gases stored in high pressure tanks as the only energy storage , and the working fluid storage , which results in a very heavy and bulky system, not suitable for any long range vehicle. It also does not disclose an electric hybrid vehicle, or any vehicle.

As per applicant's invention, there is a great advantage in using an electric hybrid vehicle (with batteries), which is fueled by hydrogen, because the combustion engine required for an electric hybrid vehicle is approximately one third of the size required for a combustion-only driven vehicle. That means, the electric hybrid has approximately three times longer range per the same amount of hydrogen. Because compressed hydrogen storage is very bulky and heavy , any hydrogen fueled combustion-only vehicle would have a very limited range, similar to electric-only vehicles.

The electric-hybrid vehicle configuration fueled by hydrogen makes the hydrogen-electric

vehicle of the invention competitive in the range with the gasoline fueled, combustion-only vehicles, and is non-polluting. It should be noted, that the negligible amounts of nitrogen oxides generated can be captured by a well known catalytic converter.

The range limitation of the hydrogen fueled, combustion-only, large engine vehicle is now overcome by applicant's hydrogen fueled electric hybrid vehicle with a small internal combustion engine / generator, and an electric motor with batteries.

It is also a cost effective alternative to fuel cell vehicles, and this alternative will not deplete the world's supply of platinum.

The fueling of the electric hybrid vehicle with non-polluting hydrogen gas may be done on demand only for safety, by electrolysis of water carried in the vehicle, or the hydrogen may be stored in a tank, which may contain a metal hydride, or the hydrogen may be supplied from both.

Preferred embodiments of the invention are illustrated in the following example: Referring now in more detail, particularly to the drawings of this patent and Figures 1, 2, 3 and 6 showing two wheeled and steered electric hybrid vehicle and its systems.

The propulsion system comprises, at least one electric motor 31 behind the seat 6, which may preferably have a copper disc clutch 200 (which may be controlled by the driver by well known means), and a reduction drive 32 preferably driving a larger rear wheel 4 through a timing belt 33, and pulleys 33A and 33B. At least one battery or batteries 96 and 97 are preferably mounted under the seat 6, or on both sides of the

rear wheel 4 (not shown), to keep the center of gravity of the vehicle low. The clutch 200 protects the motor and the batteries from an electric surge load during acceleration from standing or other shocks, and the copper material provides long wear life. The electric motor may be controlled by a variable speed controller 27, attached to the foot rest platform 8, or it may be attached to the motor 31 (not shown), or to other components. An accelerator which is electrically connected to the controller 27, may be a potentiometer 34 turned by a cable from a "wrist-twist" of the handle 14. There is no "shifting" of speeds involved. Other electrical components like electronic boards, relays, breakers, switches, fuses and distribution blocks (not shown) may be mounted in an electrical box 38, preferably behind the seat.

In addition to this "electric-only" drive, there is optionally provided at least one additional power system, comprising a small open to air internal combustion engine 87, as shown in Fig. 6, which may be a piston type reciprocating engine, rotary piston type, or a turbine, which is driving an electric current generator 104, which may be an alternator with a rectifier and voltage regulator for charging the batteries 96 and 97. The generator 104 may replace the engine flywheel to reduce the total weight, and may have a clutch 250 to enable the engine to start without the generator load. This results in a smaller, lighter and less fuel consuming engine. The engine/generator unit may be mounted on a rack or shelf 35, behind the driver's seat 6 and above the rear wheel 4, and may

be enclosed by an aerodynamic end cover enclosure 37. The shelf 35 is supported by braces 36 and 36A. The aerodynamic end cover enclosure 37 may be also sound-proofed to reduce the engine noise. It is preferred to have the engine on the very end of the vehicle for the same reason, and because the engine is usually lighter than the generator. This additional power back-up system provides for an electric-hybrid vehicle and serves as a mileage extender, or as a main cruising power supply, with batteries used only for acceleration and extra power for hill climbing. The generator should be designed for cruising power, plus extra for charging the batteries during level cruising, and for other loads. However, it is possible to drive this vehicle a shorter distance only on battery power, as a "stealth" vehicle.

To make this engine or turbine non-polluting, it should preferably be fueled by hydrogen, contained in the tank 103, which tank may also contain a metal hydride of well known type.

Since the use of hydrogen as a fuel requires precautions, it may be produced on demand only for safety reasons, by electrolysis of water, which may be produced by action of the electric current generator 104, or the hydrogen may be produced by other sources.

If electrolysis of water is used, then the hydrogen tank 103 may be replaced (or assisted) by a hydrogen generating cell 105 of well known type, which may be electrically connected to the generator 104. The water may have also an antifreeze agent added thereto.

The hydrogen generating cell 105 may also be electrically connected to a battery 109, and/or to the batteries 96 and 97, to start the system operating and also for vehicle acceleration when the demand for fuel is high. The batteries may be recharged by the generator 104 during low power cruising or standing.

A simplified schematic diagram illustrating the principles of the system is shown in Fig. 6, which is another embodiment of the invention. Switches or relays 110, 111, 112, 115 and 116 and valve 113 control the system functions as desired.

Referring now to Fig. 6 in more detail, the simplified operation of the system is as follows:

To start the engine 87 running, the switch 111 or switch 116 is turned "ON", which delivers direct electric current from the battery 109, or from the batteries 96 and 97 (if they still have some electric energy stored in them), to the hydrogen-oxygen generating cell 105, which produces hydrogen and oxygen gases and the gases are delivered into the combustion chamber of the engine 87. The engine 87 is simultaneously cranked either manually, or by its own cranking battery with a starter (not shown). Because the hydrogen fuel and air, plus oxygen are being delivered into the engine, the engine starts running and also driving the generator 104. When the switch 110 is turned "ON", the direct electric current from the generator 104 is delivered to the cell 105 and adds to, or replaces the current from the batteries 109, or 96 and 97. The switches 111

and/or 116 may then be turned "OFF", which will disconnect the batteries from the cell 105.

If it is desired that the cell 105 is to be used to assist only in delivery of the fuel, then the engine 87 may be started as follows:

During cranking of the engine 87, all the switches shown are turned "OFF", but the valve 113 is opened, which delivers stored hydrogen fuel from the tank 103 into the combustion chamber of the engine 87, and the engine starts running and driving the generator 104. When the switch 110 is turned "ON", the electric current is delivered to the cell 105, which starts producing hydrogen and oxygen gases, and these gases are delivered into the engine 87, supplementing or replacing the hydrogen fuel from the tank 103. The valve 113 may then be closed. The batteries 109, 96, and 97 may also be recharged by the generator 104 when the switches 115 and 112 are turned "ON".

All the above described functions can be automated and controlled by an electronic controller (not shown), and all the switches may be replaced by relays.

All the "negative" or all the "positive" wires may be replaced by an electrically conductive frame or chassis.

1

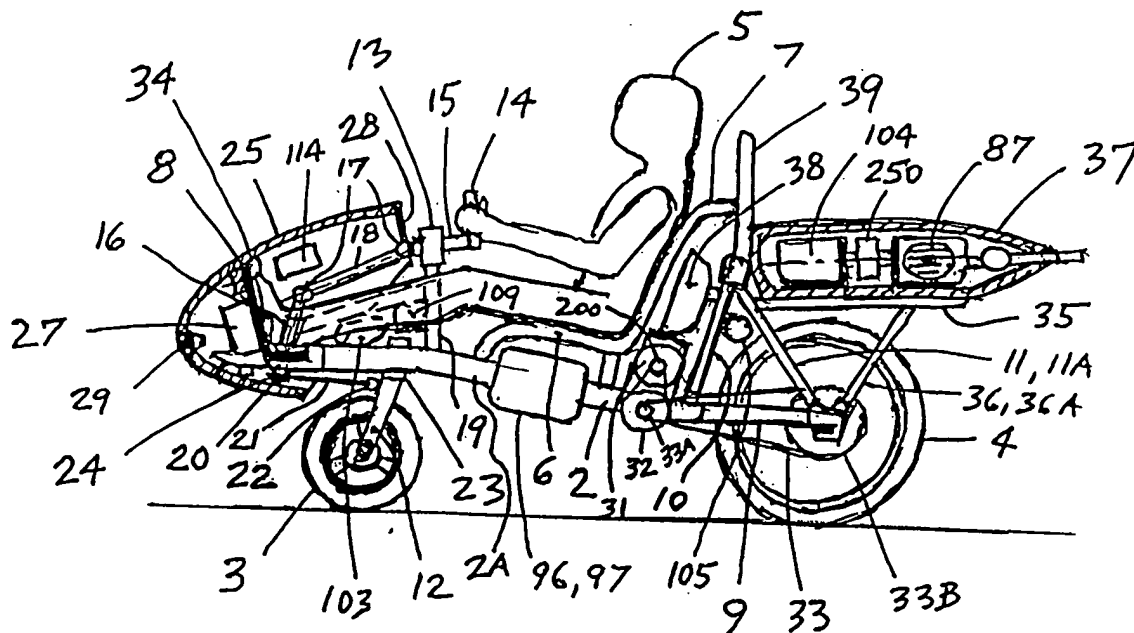


FIG. 1

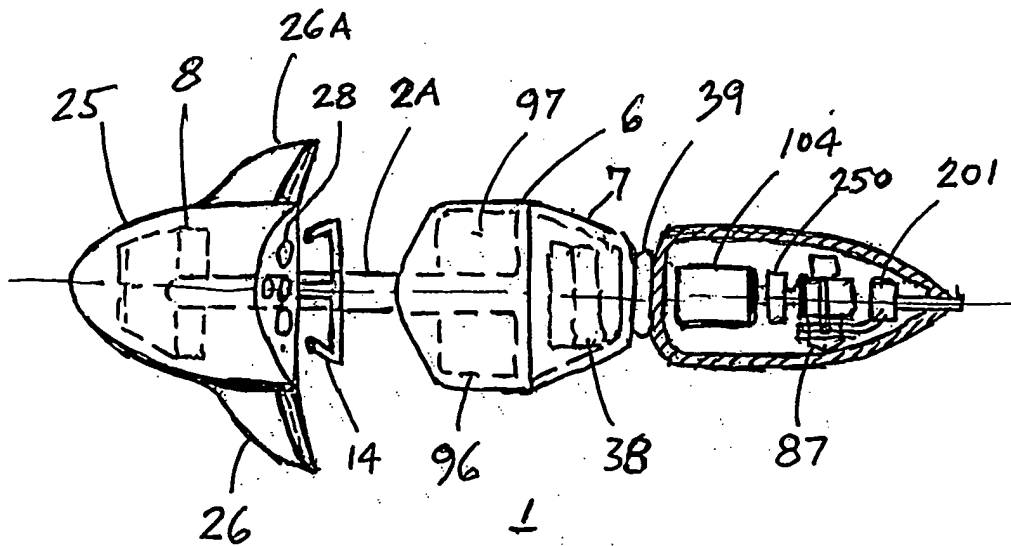


FIG. 2

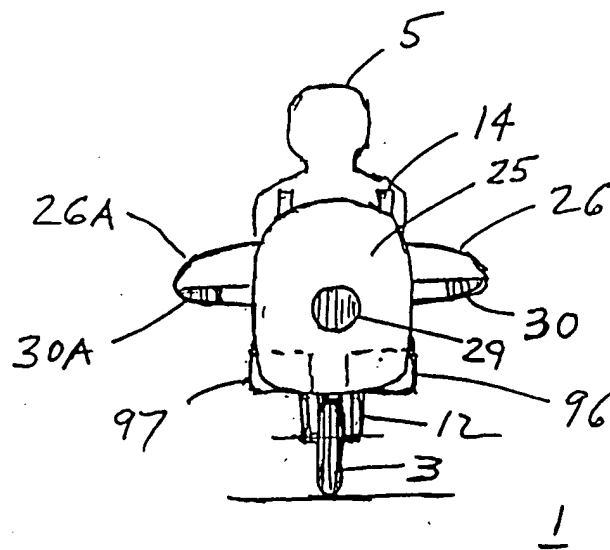


FIG. 3

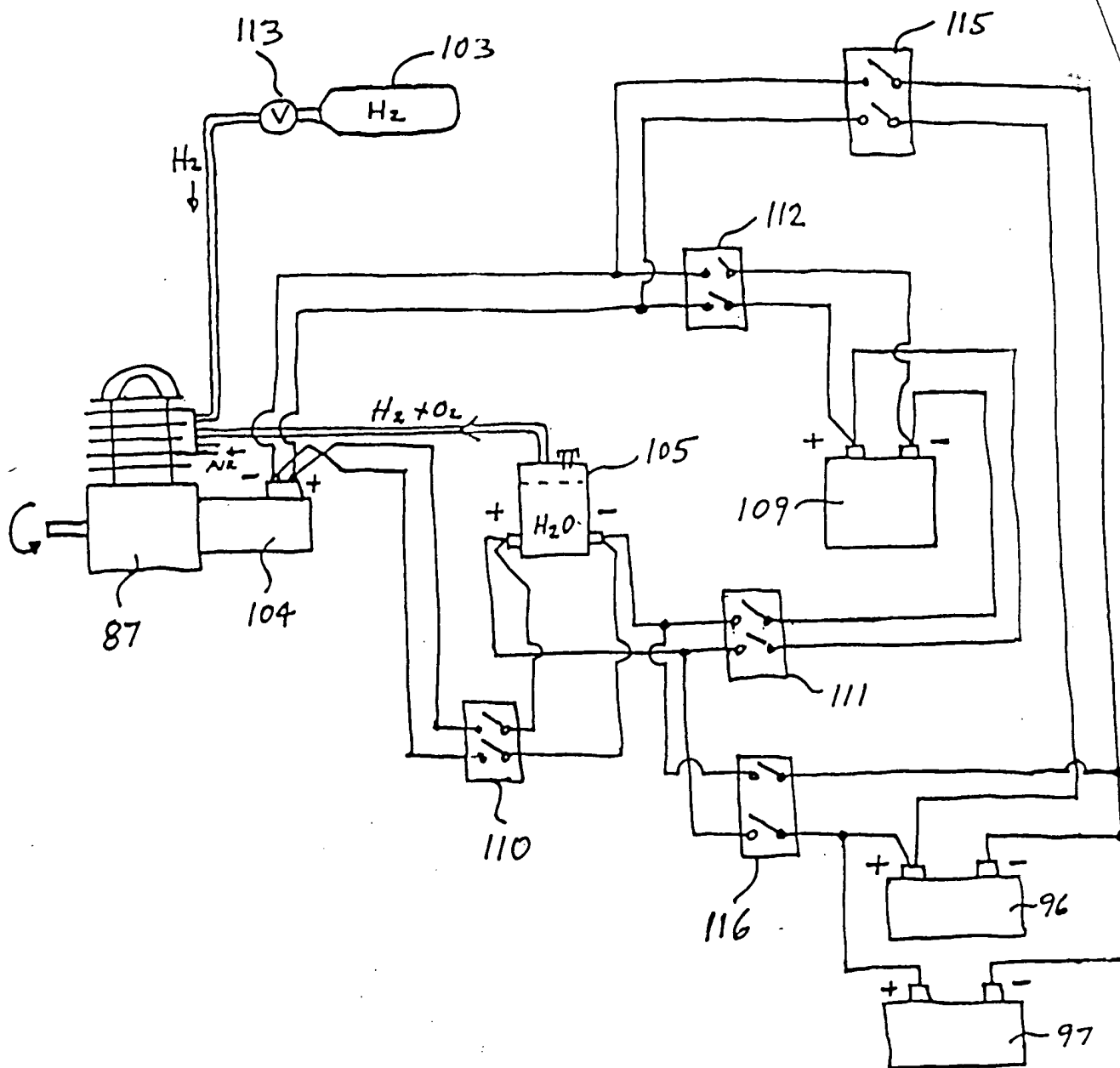


FIG. 6

ISSUES FOR REVIEW

1. WAS THE EXAMINER'S REJECTION OF CLAIMS 10-12 UNDER 35 U.S.C. SEC. 103 AS OBVIOUS OVER WEST NO. 3,517,766 ; LAUMANN AT AL. NO. 4,112,875 ; THOMSON AT AL. NO. 3,554,311 AND MUNDAY NO. 5,143,125 IN ERROR ?

GROUPING OF CLAIMS

The claims do not stand or fall together.

Claim 10 describes a two wheeled and steered electric hybrid vehicle with batteries , carrying at least one passenger, and which vehicle has at least one electric motor , and at least one electric generator which is driven by an open to air internal combustion engine , and this engine is fueled only by hydrogen from a storage system carried in the vehicle.

Claim 11 describes a two wheeled and steered electric hybrid vehicle with batteries , carrying at least one passenger , and which vehicle has at least one electric motor, and at least one electric generator which is driven by an open to air internal combustion engine , and this engine is fueled only by hydrogen , from a hydrogen generating cell by electrolysis of water carried in the vehicle , and the hydrogen generating cell is powered by the generator and /or battery , and the hydrogen is not stored under pressure.

Claim 12 describes an electric hybrid vehicle with batteries , carrying at least one passenger , and which vehicle has at least one electric motor , and at least one electric

generator which is driven by an open to air combustion engine , and this engine is fueled only by hydrogen supplied from a storage system , and /or from a hydrogen generating cell by electrolysis of water , both of which are carried in the vehicle, and the hydrogen generating cell is powered by the generator and / or a battery.

ARGUMENT

1. The Examiner's rejection of claims 10-12 under 35 U.S.C. Sec. 103 as obvious over West , Laumann at al. , Thomson at al. and Munday was in error.

The Examiner's position is that :

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over West (US 3,517,766) in view of Laumann et al. (cited by applicant), and Thompson et al. (US 3,554,311). West teaches a vehicle having a body (1) an internal combustion engine (14) which is not sealed from the atmosphere, a pair of generators (16, 17) driven by the engine, a battery (10) connected to the generators and motor (11), the electric motor (11) connected to both the battery and generators, the motor for driving the vehicle, wherein the vehicle is further provided with a steering system (6, 7).

The reference of West fails to teach the internal combustion engine as being powered by hydrogen obtained through the electrolysis of water wherein the electrolysis element is further connected to the battery and generator. Laumann et al. teach a hydrogen fuel system for an internal combustion engine (24) which in turn drives a generator (22) wherein hydrogen gas is provided as the primary fuel (as opposed to a supplement to an existing petroleum fuel source) for the engine from an electrolysis device (26) fed from a water supply (27) and from an electric energy source (12). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the conventional internal combustion engine taught by West with the hydrogen fueled engine and hydrogen supply source taught by Laumann et al. for the purpose of greatly reducing the exhaust emissions from the vehicle even while the engine is operating.

The references of West and Laumann et al. fail to explicitly teach the electric supply of the electrolysis device to be connected to both the generator and battery. In view of the provision of both a battery and generators on the vehicle of West, and the interconnections between both the battery and the generators and the motor of West, it would have been obvious to one of ordinary skill in the art at the time of the invention to connect both the generators and the battery of West to be operative to supply electric energy to the electrolysis device for the purpose of insuring the production of hydrogen fuel may be accomplished either while the engine is operating (i.e., through current supplied from at least one generator) or when the vehicle is stopped (i.e., through current supplied from the battery).

The reference of West as modified by Laumann et al. fails to teach the system as being applicable to a vehicle which rides on two wheels. Thompson et al. teach a two wheeled vehicle (wheels 4, 6) having a steering system (10, 12, 14) and a plurality of batteries (42, 44) for driving an electric drive motor (46). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the vehicle hydrogen/oxygen fuel source, engine, generators, and drive motors of West as modified by Laumann et al. in a two-wheeled configuration as taught by Thompson et al. for the purpose of providing a resulting small electric-powered recreational vehicle which does not require connection to an outside power source for the replenishment of its batteries, facilitating a greater vehicle range.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over West (US 3,517,766) in view of Laumann et al. (cited by applicant), Munday (US 5,143,025) and Thompson et al. (US 3,554,311). West teaches a vehicle having a body, an internal combustion engine which is not sealed from the atmosphere, a pair of generators driven by the engine, a battery connected to the generators and motor, the electric motor connected to both the battery and generators, the motor for driving the vehicle, wherein the vehicle is further provided with a steering system.

The reference of West fails to teach the internal combustion engine as being powered by hydrogen obtained through the electrolysis of water wherein the electrolysis element is further connected to the battery and generator. Laumann et al. teach a hydrogen fuel system for an internal combustion engine which in turn drives a generator wherein hydrogen gas is provided as the primary fuel (as opposed to a supplement to an existing petroleum fuel source) for the engine

from an electrolysis device fed from a water supply and from an electric energy source. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the conventional internal combustion engine taught by West with the hydrogen fueled engine and hydrogen supply source taught by Laumann et al. for the purpose of greatly reducing the exhaust emissions from the vehicle even while the engine is operating.

The references of West and Laumann et al. fail to explicitly teach the electric supply of the electrolysis device to be connected to both the generator and battery. In view of the provision of both a battery and generators on the vehicle of West, and the interconnections between both the battery and the generators and the motor of West, it would have been obvious to one of ordinary skill in the art at the time of the invention to connect both the generators and the battery of West to be operative to supply electric energy to the electrolysis device for the purpose of insuring the production of hydrogen fuel may be accomplished either while the engine is operating (i.e., through current supplied from at least one generator) or when the vehicle is stopped (i.e., through current supplied from the battery).

The reference of West as modified by Laumann et al. fails to teach the production of hydrogen on demand, the hydrogen not being stored. Munday teaches a hydrogen generating system for an engine (10) wherein an electrolysis apparatus (10) is employed to generate hydrogen and oxygen gases (in 36, 40) on demand to power the engine in response to the operation of a control pedal (figures 12-18, col. 5, line 59 to col. 7, line 13). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the electrolysis device and storage system taught by the modifying reference of Laumann et al. as applied to the West reference with an on-demand hydrogen and oxygen generating device as taught by Munday for the purpose of eliminating any hazards associated with the storage of hydrogen and oxygen gases.

The reference of West as modified by Laumann et al. and Munday fails to teach the system as being applicable to a vehicle which rides on two wheels. Thompson et al. teach a two wheeled vehicle having a steering system and a plurality of batteries for driving an electric drive motor. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the vehicle hydrogen/oxygen fuel source, engine, generators, and drive motors of West as modified by Laumann et al. and Munday in a two-wheeled configuration as taught by Thompson

et al. for the purpose of providing a resulting small electric-powered recreational vehicle which does not require connection to an outside power source for the replenishment of its batteries, facilitating a greater vehicle range.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over West (US 3,517,766) in view of Laumann et al. (cited by applicant). West teaches a vehicle having a body, an internal combustion engine which is not sealed from the atmosphere, a pair of generators driven by the engine, a battery connected to the generators and motor, the electric motor connected to both the battery and generators, the motor for driving the vehicle, wherein the vehicle is further provided with a steering system.

The reference of West fails to teach the internal combustion engine as being powered by hydrogen obtained through the electrolysis of water wherein the electrolysis element is further connected to the battery and generator. Laumann et al. teach a hydrogen fuel system for an internal combustion engine which in turn drives a generator wherein hydrogen gas is provided as primary fuel (as opposed to a supplement to an existing petroleum fuel source) for the engine from an electrolysis device fed from a water supply and from an electric energy source. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the conventional internal combustion engine taught by West with the hydrogen fueled engine and hydrogen supply source taught by Laumann et al. for the purpose of greatly reducing the exhaust emissions from the vehicle even while the engine is operating.

The references of West and Laumann et al. fail to explicitly teach the electric supply of the electrolysis device to be connected to both the generator and battery. In view of the provision of both a battery and generators on the vehicle of West, and the interconnections between both the battery and the generators and the motor of West, it would have been obvious to one of ordinary skill in the art at the time of the invention to connect both the generators and the battery of West to be operative to supply electric energy to the electrolysis device for the purpose of insuring the production of hydrogen fuel may be accomplished either while the engine is operating (i.e., through current supplied from at least one generator) or when the vehicle is stopped (i.e., through current supplied from the battery).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that the references must explicitly provide a suggestion for combining, a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference (see *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)), with skill being presumed on the part of the artisan, rather than the lack thereof (see *In re Sovish* 769 F.2d 738, 742, 226 USPQ 771, 774 (Fed. Cir. 1985)).

The examiner agrees that the West reference fails to teach the provision of a hydrogen fueled engine, and it is for this reason that the Laumann et al. reference has been employed in combination, as Laumann teaches the use of a hydrogen-fueled engine for the purpose of reducing pollution (note Laumann col. 1, lines 27-30); and the combination set forth replaces West's internal combustion engine with the hydrogen-fueled engine and hydrogen generation system of Laumann et al. for the purpose of reducing emissions, as specifically set forth in Laumann et al. The Thompson et al. reference has been relied upon for the express teaching of a low- or no-emission vehicle which runs on two wheels.

As regards the various interconnections with the electrolysis device and batteries and/or a generator, it is not considered beyond the skill of the ordinary practitioner in the art to allow both generators and batteries in hybrid vehicles to power an electrical device, the generator being functional, for example when an engine is running (or when the generator is in use to generate a braking force), the batteries being functional, for example, when the engine is not running but the electrical device is in operation.

Applicant's position is that :

The Examiner's rejection of claim 10 based on obviousness of a combination of prior art patents to West , Laumann at al. , and Thomson et al. is in error.

Applicant agrees with the Examiner that West in U.S. patent #3,517,766 discloses an electric hybrid vehicle, which is using a polluting gasoline engine with generators and a battery powering an electric motor to propel the vehicle ; and that Laumann in U.S. patent #4,112,875 provides a hydrogen fueled , closed cycle engine with a generator , and with solar cells to power a hydrogen/oxygen generating cell , while the gases are stored under pressure ; and that Thomson in U.S. patent # 3,554,311 provides a two wheeled pure electric vehicle having only a battery and electric motor. However , West does not suggest that his vehicle is fueled by non-polluting hydrogen , Laumann does not suggest or disclose an open to air engine fueled by hydrogen , or an electric hybrid vehicle with a battery for storing energy - but stores the energy only in the form of compressed hydrogen instead , and Thomson does not suggest an electric hybrid vehicle fueled by hydrogen. That any vehicle can be made pure electric is well known.

Applicant believes , that the Examiner's combination of references is improper and applicant does not believe , that his invention as claimed in claim 10 is obvious , because nothing in the references cited by the Examiner suggests the system of applicant. Applicant believes that he is the first to teach a novel and unobvious, long range and non-polluting hydrogen - electric hybrid vehicle , and that the Examiner' combination of references does not meet the Applicable Court Standards.

**THE APPLICABLE STANDARDS FOR
COMBINING REFERENCES UNDER SECTION 103**

The Patent and Trademark Office must prove a prima facie case of obviousness of the claimed invention.

"One of the more difficult aspects of resolving questions of non-obviousness is the necessity 'to guard against slipping into the use of hindsight.'" In re Carroll, 601 F.2d 1184, 1186, 202 USPQ 571, 572 (CCPA 1979) (quoting Graham v. John Deere Co., 383 U.S. 1, 36 [148 USPQ 459,474] (1965)). The Patent and Trademark Office has the burden of showing that the prior art would have taught or suggested the claimed invention to one of ordinary skill in the pertinent art, In re Clinton, 527 F.2d 1226, 1228, 188 USPQ 365, 367 (CCPA 1976).

In re Shaffer, 108 USPQ 326, 229 F.2d 476 (CCPA) \ 1956) is one of many cases in which it is pointed out that for a combination of old elements to be patentable, the elements must cooperate in such manner as to produce a new, unobvious, and unexpected result, citing In re Kaufman, 39 CCPA (Patents) 769, 193 F.2d 331, 92 USPQ 141 and In re Lindberg, 39 CCPA (Patents) 866, 194 F.2d 732, 93 USPQ 23.

The Court in Shaffer said:

"Furthermore, as a general matter, in determining patentability, the concept of a new and useful improvement must be considered along with the actual means of achieving the improvement. In re Delancy, 34 CCPA (Patents) 849, 159 F.2d 737, 72 USPQ 477. In re Bisley, 39 CCPA (Patents) 982, 197 F.2d 355, 94 USPQ 80."

In determining obviousness it is necessary to determine whether the references themselves suggest the desirability of the proposed combination.

In re Bergel and Stock 292 F.2d 955, 956-7, 130 USPQ 206, 208 (CCPA 1961) and In re Grabiak 769 F.2d 729, 732, 226 USPQ 870, 872 (Fed. Cir. 1985).

And in In re Imperato, 286 F.2d 585, 179 USPQ 730 (CCPA 1973) it is stated:

"The mere fact that the disclosures of the prior art can be combined does not make the combination obvious unless the art also contains something to suggest the desirability of the combination. In re Bergel. supra."

See also Interconnect Planning Corporation v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985).

Also, in In re Dow Chemical Co., 5 USPQ 2d 1529, (CAFC 1988) the Court said at page 1532:

"The PTO presents, in essence, an 'obvious to experiment' standard for obviousness. However, selective hindsight is no more applicable to the design of experiments than it is to the combination of prior art teachings. There must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure."

Further, in In re Geiger, 2 USPQ 2d 1276 (CAFC 1987) the Court said at p. 1278:

"At best, in view of these disclosures, one skilled in the art

might find it obvious to try various combinations of these known scale and corrosion prevention agents. However, this is not the standard of 35 U.S.C. Sec. 103."

In order to establish a prima facie case of obviousness, the prior art teachings must be sufficient to suggest making the claimed apparatus. Here, there is no evidence of record which would have led one of ordinary skill at the time the invention was made to combine the prior art in the manner the Examiner proposes, to achieve applicants' structure.

There must have been a reason apparent at the time the invention was made to the person of ordinary skill in the art for applying the teaching at hand, in the manner proposed or the use of the teaching as evidence of obviousness will entail prohibited hindsight. In re Nomiya, 509 F.2d 566, 184 USPQ 607, 613 (CCPA 1975).

Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 415 208 USPQ 871, 881 (CCPA 1981). But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

See also:

In re Donovan and Ryan, 184 USPQ 414 (CCPA 1975)

In re Regel, Buchel and Plempel, 526 F.2d 1399, 188 USPQ 136 (CCPA 1976)

Ex parte Shepard and Gushue, 188 USPQ 563 (1974)

In re Reinhart 531 F.2d 1048, 189 USPQ 143 (CCPA 1976)

In Ex parte Thompson, 184 USPQ 558, the board, in considering a Section 103 rejection stated that it would not be obvious to substitute an element of a first reference for an element of a second reference, since to do so would destroy the apparatus of the second reference for its intended purpose.

See also:

Ex parte Hartman, 186 USPQ 366 (1974)

In re Meng and Driessen, 492 F.2d 843, 181 USPQ 94 (CCPA 1974) states:

"As we said in In re Shuman, 53 CCPA 1251, 361 F.2d 1008, 1012, 150 USPQ 54, 57 (1966) references must be evaluated by ascertaining the facts fairly disclosed therein as a whole."

The CAFC in a recent case set forth the proper inquiry for evaluating references as:

References must be considered for all that they teach. W.L. Gore & Assoc. v. Garlock, Inc., 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983) cert. denied, 469 U.S. 851 (1984).

See also In re Fritch, 23 USPQ 2d 1780 (CAFC 1992).

In combining references, the Examiner did not and could not:

1. Find any suggestion of the desirability of the proposed combination;
2. Find any suggestion for combining the references in the references themselves;
3. Find any suggestion in the references taken as a whole of the structure claimed;
4. Find the actual structure as claimed and employed to achieve a new and unexpected result.

The Examiner's rejection of claim 11 as being unpatentable over prior art U.S. patents of West , Laumann , Thomson and additionally Munday U.S. 5,143,125 is in error.

Applicant defends the claim 11 as discussed for claim 10 , and additionally against the patent to Munday on the grounds , that none of them even remotely suggests the combination or system of applicant , as claimed in claim 11 , or even that they can be selectively combined. As the Examiner stated , West and Laumann fail to teach the electric supply of the electrolysis device to be both the generator and battery. That West's engine is open to air is immaterial, since it is not fueled by hydrogen. West does not have the electrolysis device , Laumann does not have an open to air engine , does not have the battery , and does not power the electrolysis device by the generator (see Fig. 1).

Munday teaches a hydrogen generating system for an engine based on an electrolysis apparatus , but does not provide any information about the source of electricity for the apparatus , and does not suggests a hybrid electric vehicle. Applicant believes that the Examiner's combination of references to reject claim 11 does not meet the Applicable Court Standards , as described above. In combining references , the Examiner did not and could not :

1. Find any suggestion of desirability of the proposed combination;
2. Find any suggestion for combining the references in the references themselves;
3. Find any suggestion in the references taken as a whole of the structure claimed;
4. Find the actual structure as claimed and employed to achieve a new and unexpected result.

The rejection of claim 12 by the Examiner as being unpatentable over West and Laumann is in error. Claim 12 defines two sources of hydrogen for the engine of the electric hybrid vehicle: the hydrogen storage (tank) system and the hydrogen generating cell. West discloses an electric hybrid vehicle with a gasoline fueled engine, but does not suggest the use of hydrogen fuel from any source. Laumann does not suggest, or disclose an open to air engine in a hybrid electric vehicle with batteries, or even a battery in his system.

Furthermore, Laumann uses hydrogen storage as the only energy storage, as opposed to applicant's battery. Laumann also uses an electrolysis device in series with the storage tank as opposed to parallel use of both in applicant's system, as shown in Fig. 6, and Laumann does not power the electrolysis device by the generator. That West's engine is open to air is immaterial, because it is not fueled by hydrogen. None of the references cited by the Examiner even remotely suggest the combination or system of applicant, as claimed in claim 12. Therefore applicant believes, that his invention is not obvious, since nobody disclosed it or reduced it to practice, as claimed, before the time of the applicant's invention, and that the Examiner's claim rejection does not meet the Applicable Court Standards, as described above.

In combining references, the Examiner did not and could not:

1. Find any suggestion of desirability of the proposed combination;
2. Find any suggestion for combining the references in the references themselves;

3. Find any suggestion in the references taken as a whole of the structures claimed;
4. Find the actual structure as claimed and employed to achieve a new and unexpected result.

Applicant's electric hybrid vehicle fueled by hydrogen is quite different from all of the references cited by the Examiner, and applicant does not claim Laumann's engine or system. Applicants also does not claim a generator being used as a breaking force.

At no point in the references is an electric hybrid vehicle mentioned, which is fueled by hydrogen. The Examiner's hindsight reasoning is merely an invitation to experiment.

In response to Examiner's conclusion of obviousness based on "common knowlege" and "common sense" it should be realized , that most of the inventions look "obvious", after they are disclosed. Any known device can be selectively connected to any known device, but to select the right combination and to create an original feature requires vision , imagination and inventiveness. Applicant's three inventions as claimed can not be found on the record , as proposed , suggested or reduced to practice , before the time of the applicant's invention on January 12, 1993.

Additionally, nobody suggested or disclosed on the record before the time of the invention, that the short range of hydrogen fueled combustion-only vehicle can be overcome by an electric hybrid configuration , as described in the applicant's specification page 21, lines 17-26.

Accordingly, the decision of the Examiner in rejecting the claims 10-12 was in error and should be reversed.

In order to establish a prima facie case of obviousness, the prior art teachings must be sufficient to suggest the making of the claimed construction. Here there is no teaching or suggestion in the prior art of record and relied upon by the Examiner, in particular West, Laumann et al., Thomson et al., and Munday, which would have motivated one of ordinary skill in the art, at the time the invention was made, to make the many and varied modifications in the manner the Examiner proposes to obtain applicant's vehicles.

There must have been a reason apparent at the time the invention was made to the person of ordinary skill in the art for applying the teaching at hand, in the manner proposed or the use of teaching as evidence of obviousness will entail prohibited hindsight. In re Nomiya, 509 F.2d 566, 184 USPQ 607, 613 (CCPA 1975).

"In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art." In re Piasecki, 745 F.2d 1468, 1471-2, 223 USPQ 785, 787-88 (Fed. Cir. 1984).

The Examiner has not satisfied this burden as he has not shown any objective teachings in the prior art, specifically West and Laumann et al., Thomson et al. and Munday, which would lead one of ordinary skill in the art to make non-polluting, long range electric hybrid vehicle with batteries, and which has an open to air combustion engine fueled only by hydrogen from a storage system, or from a hydrogen generating cell, or from both.

The Examiner has not shown that knowledge generally available to one of ordinary skill in the art would have lead that individual to obtain the vehicles as described.

Accordingly, the Examiner has failed to meet the burden of establishing obviousness and should be reversed.

CONCLUSION

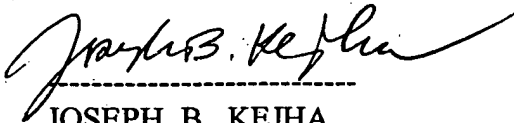
The Examiner has not made a prima facie case of obviousness because electric hybrid vehicles as described having open to air combustion engine fueled by hydrogen from a storage system, or from a hydrogen generating cell, or from both, are not called for or described in the prior art of West, Laumann at al., Thomson at al. and Munday patents.

In addition, nobody even remotely suggested or disclosed in the prior art, that the short range of hydrogen fueled combustion-only vehicle can be overcome by electric hybrid configuration.

Moreover, any prima facie case has been rebutted by the showings made here.

It is believed that the claims define a new, useful, and unobvious invention. Reversal of the Examiner's rejection and allowance of the claims is respectfully requested.

Respectfully submitted,



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APPENDIX

CLAIMS

10. Electric vehicle construction which includes a body for carrying at least one passenger and an electric propulsion system with at least one electric motor , at least one battery , at least one electric current generator for charging said battery and which is driven by an internal combustion engine , and a hydrogen storage system having hydrogen therein attached to said body , and which body rides on two wheels with a steering system attached to said body , the improvement wherein

said engine is an open to air combustion engine and is fueled only by said hydrogen.

11. Electric vehicle construction which includes a body for carrying at least one passenger and an electric propulsion system with at least one motor , at least one battery , at least one electric current generator for charging said battery and which is driven by an internal combustion engine , and a hydrogen generating cell attached to said body, and which body rides on two wheels with a steering system attached to said body , the improvement wherein

said engine is open to air combustion engine and is fueled only by hydrogen which is produced by electrolysis of water in said hydrogen generating cell , said cell is electrically connected to said generator and also to said battery , the hydrogen is not stored under pressure and is immediately consumed by said engine.

12. Electric vehicle construction which includes a body for carrying at least one passenger and electric propulsion system with at least one electric motor, at least one battery, at least one electric current generator for charging said battery and which is driven by an internal combustion engine, a hydrogen storage system having hydrogen therein and a hydrogen generating cell which generates hydrogen by electrolysis of water, the improvement wherein

said engine is open to air combustion engine and is fueled only by hydrogen, the hydrogen being supplied from said storage system and from said hydrogen generating cell, said cell is electrically connected to said generator, and said cell is also electrically connected to said battery.